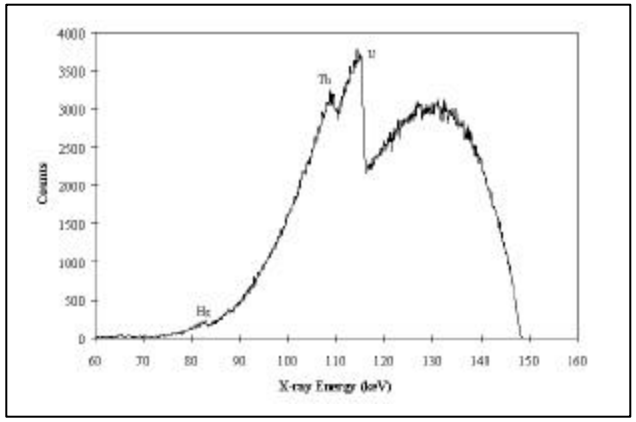
Portable X-Ray, K-Edge Heavy Metal Detector (TechID 134)

The X-Ray, K-Edge Detector delivers a beam of x-rays through solid structures, such as pipes or equipment, and analyzes the absorption of x-rays having energies near the k-edge energies of various elements, to assay the elemental composition of materials inside.



Developers:

- US DOE, Center for Nondestructive Evaluation, Iowa State University, Ames, IA

Applications:

- Assay radionuclides and hazardous heavy metals inside pipes, ducts, and other equipment
- Guide cutting of pipes and equipment
- Assay soil, sludge, and other materials for radionuclide and heavy metal concentrations

Benefits:

- Assay system capable of measuring amount of hazardous and nonradioactive elements inside a sealed structure
- Improves worker safety during dismantlement by quantifying heavy metals and radionuclides inside sealed process equipment

Status:

- Bench-scale demonstrations of system in FY97 on contaminated pipes at K-25 Plant, Oak Ridge National Laboratory and on spent nuclear fuel from an Iowa University reactor
- Full-scale demonstration at building undergoing D&D at Ames Lab in FY98
- Deployment in a Large-Scale Demonstration Project at Savannah River Site 321-M Facility
- Innovative Technology Summary Report Available (www.cmst.org)